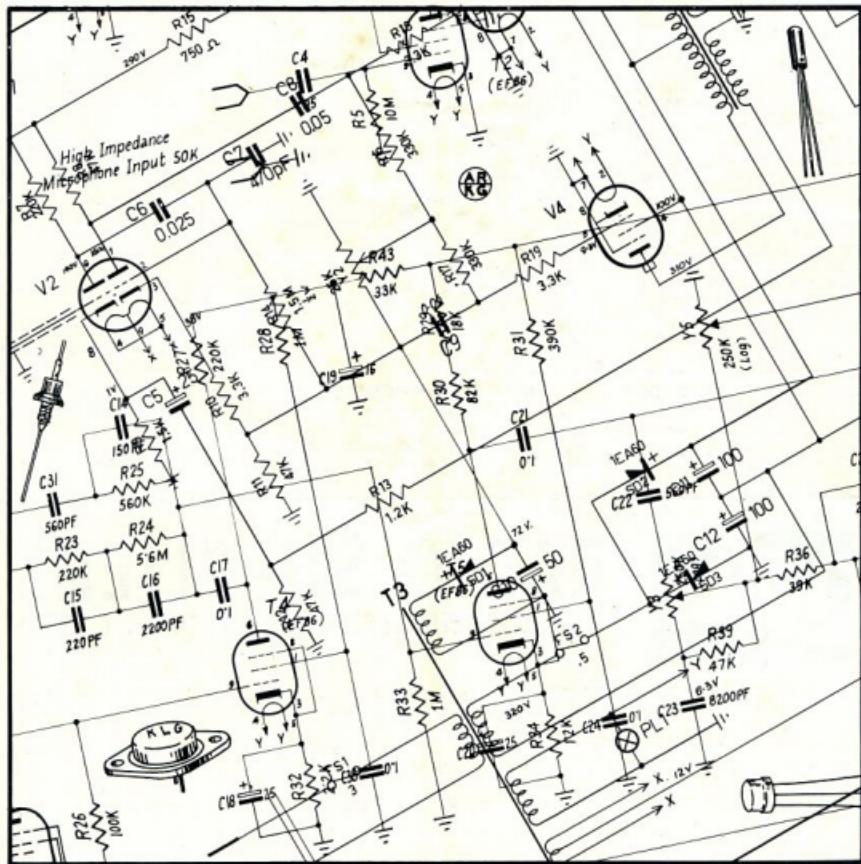


amateur radio

Vol. 39, No. 2

FEBRUARY, 1971



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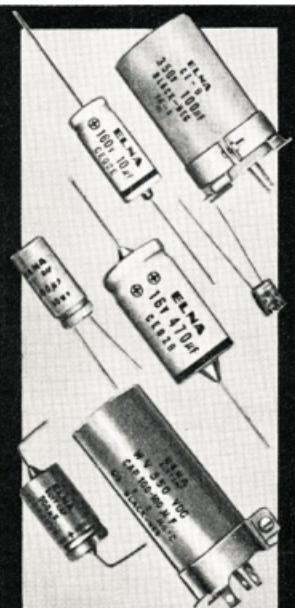
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CONTENTS

Technical Articles:—

	Page
Counter Used for Frequency Measurement: Part One—Generation of Time Intervals	5
Harmonics, Lecture No. 10C	6
General:—	
Amateur Equipment and the Customs Dept.	10
Cook Award	11
Correspondence	15
"CQ" W.W. DX Contest Aust. Results	11
DX	14
Errata	8
Federal Comment: On Project Australis	4
Federal Repeater Secretariat Report	8
F.M. Broadcasting	10
Heard All VK Call Areas (H.A.-VK-C.A.) Award	9
New Call Signs	12
N.Z.A.R.T. Subscription	8
Obituary	12
Prediction Charts for February 1971	10
R.S.G.B. Certificates and Awards	11
Silent Keys	15
VHF	13
VK2 Area 5 Meeting	12
VK2 Field Days and Activities for 1971	13
W.I.A. Worked All States (Aust.) Award	9
Winning Divisions of R.D. Trophy—1948 to 1970	8



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FEDERAL COMMENT

ON PROJECT AUSTRALIS, by John Battrick, VK3OR

I guess your first reaction to this Federal Comment is why is the W.I.A.'s I.A.R.U. Region 3 Association Director commenting on Project Australis? There are several reasons for my doing so.

Firstly, as you know this current satellite project—known as AO-B (AMSAT-OSCAR B) is a combined effort between Region 1, Region 2, and Region 3 Amateurs. Certainly not on an official regional basis, but the launch of the second of the AMSAT series of Amateur Radio spacecraft experiments (the sixth of the widely-known OSCAR series) and the specification of the general requirements necessary for the design, fabrication and test of the spacecraft is the responsibility of the U.S.A.-based Radio Amateur Satellite Corporation.

The design and fabrication of a translator with an uplink frequency in the 432 MHz. band and a downlink frequency in the 144 MHz. band is being undertaken in Germany, and is referred to as the DJ4ZC experiment. Conversely, the design and fabrication of a translator with an uplink frequency in the 144 MHz. band and a downlink frequency in the 432 MHz. band is being undertaken in Australia and is the activity being undertaken by the W.I.A. Project Australis Group. So the ultimate package envisaged at the moment will fly and operate as a result of a combined effort by Amateurs in all of the regions of the I.U.T.U.

However, that is not the real reason why I comment, although it is certainly an aspect of the activity which I believe to be most important; the next Amateur satellite will be a "talk-through" satellite and it will be operable as a result of this combined effort of Amateurs across the world! The real reason is, that at its last meeting the Federal Executive of the W.I.A. appointed me to the position of W.I.A. FEDERAL OSCAR CO-ORDINATOR.

This office was formerly held by Richard Tonkin in his capacity as the

Chairman of the Project Australis Group. Richard and the members of his group (Les Jenkins, VK3ZBJ, who builds the translators; Peter Hammer, VK3ZPI, who builds the telemetry; Harold Hepburn, VK3AFQ, who handles procurement and builds sub-systems; Derek Brumley, VK3AVW, who is group treasurer; Edwin Shoell, VK5NZ, who assists with design), yes, that is about all the "group" comprises; these fellows asked the Institute for some assistance with co-ordination, publicity, administration, etc., and for some reason requested my assistance.

The Federal Executive discussed the matter with Richard and myself and all agreed that the two functions should be separated, that of the chairman of the Project Australis Group from that of the W.I.A. Federal Co-ordinator. So Richard and I now work together, and effect the liaison between the group responsible for the design and fabrication of the spacecraft, and the Amateurs of Australia and the world who we hope will use the ultimate system when it flies. So my first real job in my new position is to report briefly to you on the progress of the project.

At the time of reading this, a prototype translator will have been sent to AMSAT in U.S.A. for testing. It has been thoroughly tested in Melbourne, and meets the published specifications. Other prototype modules have been in operation as repeaters in Melbourne, and also will be flown to 100,000 feet on HIBAL balloon launches from Mildura during March. In addition to this prototype testing, the actual flight package will be completed and sent to the U.S.A. during March this year. This package will contain the translator, the command system and the telemetry systems.

The main problems of course in a combined experiment like this are the "interface" requirements—that is the physical and electrical specifications necessary so that the W.I.A. part, and the DJ4ZC part, and the launch vehicle

all fit together so the final package flies and works. Many skirmishes between the Project Australis Group and AMSAT have been undertaken and much correspondence has been entered into in order to actually finalise the specifications, especially interface specifications.

I mention this to point out that this is not a simple experiment like the previous Oscar 5, but a complex affair needing intense and exact co-ordination across the world. The Federal Executive of the W.I.A. believes that the people engaged at the design and fabrication level had done an outstanding job, but they don't have much time left to report to you, the members of the W.I.A. Any hour spent in writing reports, preparing articles, etc., leaves less time to draw up printed circuit boards or fit large quantities of ICs in confined spaces. As the AMSAT boys require the space hardware about now, the group has concentrated its limited resources of private time on the actual building of the spacecraft package.

My function will be to assist them with what they do not have time to do. I hope to feed information to your State Co-ordinators regularly, to other Amateur Societies, and generally assist in the overall co-ordination.

Of course, I have another function. The W.I.A. is financing this Project. To date about \$1,200 has been spent, about \$24,000 worth of components has been donated and installed, and we require by the end of March a further \$2,000 cash. May I make a personal plea for you as individual members to donate, and for you as members of a Division to direct your Councils to donate as your resources allow to a project which will, I believe, achieve more to raise the status of the W.I.A. and the Amateur Service generally than any other single activity undertaken during the long history of this Institute. I am pleased to have been asked to assist. **Will you also please assist?**

COUNTER USED FOR FREQUENCY MEASUREMENT

PART ONE—GENERATION OF TIME INTERVALS

ROBERT H. BLACK,* M.D., VK2QZ

Frequency is the expression of the number of events occurring per unit of time. A previous article (Black, 1970) described a method of counting the events; the present article describes the generation of accurate time intervals using a 100 KHz crystal oscillator and a series of binary coded decimal frequency dividers. This method of frequency division has been found to be more reliable than one using multivibrators, particularly at pulse intervals of 0.1 sec. and longer.

The diodes and 300 pF capacitors come "free" on the boards, as may some of the resistors. Each decade is built on a particular type of board which had transistors mounted along the side—this saves a certain amount of drilling time. The whole timing unit will cost about \$20, power being obtained from a second regulated supply.

Using 083 transistors this circuit will divide appropriate pulses arriving one million times per second and this pro-

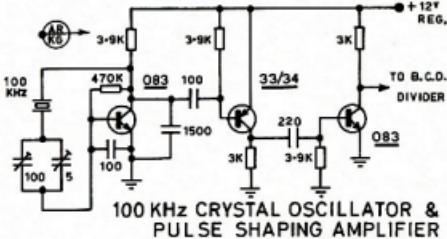
perty is used for frequency division of the input signal when its frequency is greater than, say, one or two hundred thousand (and up to 1 million) times per second. The pulse shaping amplifier and the dividing decade are shown beside the time unit in the photograph (the amplifier being the same as the one following the crystal oscillator except for 3.5 mH RFC in the collector circuits on the transistor side of the 3K resistors). If you want a significant last digit (± 1) you can count for 10 seconds.

At the lower frequencies the speed-up capacitors (39 pF.) and recovery diodes (R.D.) should not be necessary.

The final article in this series will describe the method of timing bursts of pulses which are counted and displayed and then counted again and so on. The whole unit then being a frequency meter which measures frequencies accurately up to 1 MHz.

REFERENCES

Black R. H., 1970. Putting the Decades to Work: A Low Cost Counter. "Amateur Radio," October 1970.
Kench, E. J., 1967 (Ed.). Electronic Counting, London, Mullard.



There is nothing unusual about the crystal oscillator in which there are two variable capacitors in series with the crystal, one of 100 pF. for coarse and one of a few pF. for fine frequency adjustment using VNG on 4.5, 7.5 or 12 MHz., or WWV as reference.

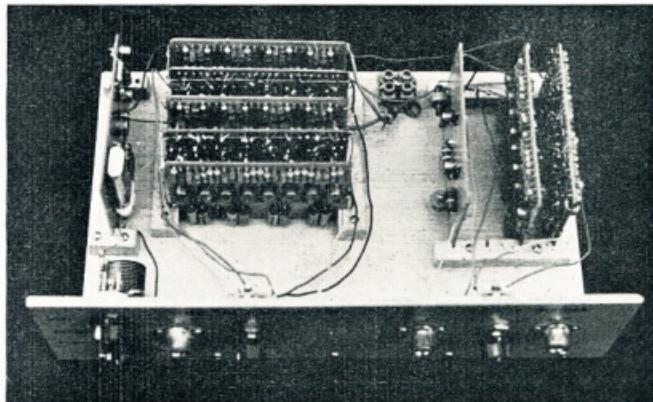
The oscillator is followed by pulse shaping and amplifying stages. The output consists of negative pulses with a p.r.f. of 100,000/sec. The crystal was obtained by airmail order from U.S. for about \$4.50 and was delivered eight days after the order was posted.

The frequency dividing unit consists of a series of six binary coded decimal frequency dividers (Kench, 1969). Outputs having intervals of 1/100, 1/10, 1 and 10 sec. are useful for frequency measurements with the counter described and these are obtained by switching to the appropriate decade. The cost of a decade is calculated as:

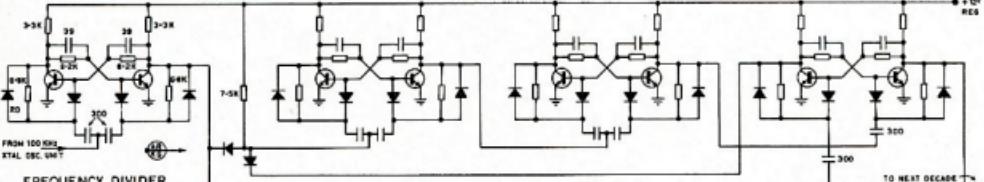
8 transistors at 7.5c each	60c
25 resistors at 3c each	75c
8 29 pF. capacitors at 10c ea.	80c

\$2.15

* 2 Yerton Avenue, Hunter's Hill, N.S.W., 2110.



The crystal oscillator and amplifier is seen on the left; five frequency dividing decades are to the right of this, and on the right hand side the amplifier and two decades for signal frequency division.



Binary coded decimal counter used as frequency divider for generation of time intervals. Transistors are 083 and diodes are germanium type from circuit boards.

HARMONICS

LECTURE No. 10C

So far we have shown how harmonic distortion will be produced, if an amplification system is not linear and whilst in the amplification or electrical transmission of speech or music we aim for the lowest amount of harmonic distortion we can achieve, there are times when harmonics can be useful, and this lecture was started because of a problem which required use of harmonics.

Reference has already been made of the use of harmonics in a radio transmitter in order to obtain a high frequency from a much more stable lower frequency. Also it sometimes happens, particularly if a self-excited oscillator is used to generate a carrier frequency in a telephony transmitter using amplitude modulation, that there may be feedback through the transmitter and some of the amplitude modulation causes frequency modulation of the oscillator if the oscillator and the modulated stage are on the same frequency. Operating the oscillator at a lower frequency and using one of its harmonics to derive the final frequency is one way of getting over this problem.

Now the plate efficiency of a class C plate modulated amplifier will be between 66.6 and about 77%. However, in recent years some transmitters have been made having plate efficiencies around 90%.

One manufacturer told the writer that at times it had been found that a transmitter in a series of similar ones was giving appreciably more output, for the same plate input, as the others. Investigation showed, however, that this transmitter was producing more odd-harmonic distortion of its r.f. output than normal.

All designers of radio transmitters, no matter the size or purpose, are faced with the problem of preventing the generation of spurious frequencies, that is, frequencies which are not harmonically related to the fundamental frequency.

A method which assists considerably to prevent spurious or parasitic oscillation is to connect a small radio frequency choke as close as possible to the plate of the valve, electrically between the plate valve and the plate tuned circuit.

The investigation into transmitters having the very high plate efficiency showed that this choke, in the output r.f. amplifier plate circuit, was resonating at one of the odd-order harmonics due to the stray capacitance to ground of the choke, the choke and stray capacitance forming a parallel resonant circuit.

Later it was found that if a parallel resonant circuit was connected in the cathode circuit of the valve and tuned to the same harmonic then with both tuned circuits in operation the plate efficiency of the stage could be as much as 90%, i.e. 90% of the d.c. power fed

- Continuing the series of lectures by C. A. Cullinan, VK3AXU, at Broadcast Station 3CS for students studying for a P.M.G. Radio Operator's Certificate.

to the plate of the valve, appeared as useful r.f. power.

Of course the output contained a considerable amount of the harmonic, but this could be reduced to negligible proportions by the use of filters.

Many broadcast transmitters, some with r.f. power outputs as great as 50 kW, are employing this method of the practical use of harmonics. (Usually either the 3rd or 5th.)

The method is not very practical with a variable frequency transmitter because of the need to re-adjust the parallel tuned circuits for each frequency, as well as the harmonic filters.

CHECKING CALIBRATION OF MOD. OSCILLATOR

(Also applies for Calibration of Frequency Meter)

Now for the tape recorder. A fault had occurred in the erase-bias oscillator and a number of new components had replaced defective ones. It was most essential to be certain that the oscillator was operating on its nominal frequency, 58 KHz.

No equipment was available to check this directly so it was decided to use harmonics of the oscillator and check these with stations in the medium frequency broadcast band.

Since June 1968, the A.B.C.B. has required all Australian m.f. broadcasting stations to hold frequency within ± 10 Hz. of the assigned frequency. Incidentally, the Standard of Reference must be the P.M.G. Standard of Frequency, and it was known that many stations do much better than the permitted tolerance.

For instance, the following are the measured deviations from the assigned frequencies of the four stations of Associated Broadcasting Services Limited, on 23/7/69:

- 3UL—Assigned freq. 530 KHz.
deviation, +1.5 Hz.
- 3CS—Assigned freq. 1130 KHz.
deviation, -1.2 Hz.
- 3YB—Assigned freq. 1210 KHz.
deviation, +4.0 Hz.
- 3SR—Assigned freq. 1260 KHz.
deviation, +1.35 Hz.

The manual which accompanied the recorder gave the nominal frequency of the oscillator as 58 KHz, and as 3WV operates on 580 KHz, it appeared to be worthwhile to try and find out if the 10th harmonic of the oscillator would zero-beat with 3WV. The 9th harmonic would fall outside the m.f. broad-

C. A. CULLINAN,* VK3AXU

cast band whilst the 11th, 12th and 13th would not be exactly on the same frequency as any b.c. station. Fortunately in our location, 3WV could be heard sufficiently strongly to make the trial feasible.

A Palec modulated oscillator type 1, possibly of World War II. vintage, was available but its accuracy was an unknown quantity so the first thing to do was to check its calibration against b.c. stations so that it could be substituted as a signal source in identifying the 11th, 12th and 13th harmonics of the recorder oscillator.

The overall accuracy of this procedure would be sufficient for our purpose.

A transistorised radio receiver with a ferrite rod aerial was obtained and tuned to 3UL, the modulated oscillator having been switched on for about two hours to warm up thoroughly, was then tuned to the same frequency, getting the best possible zero-beat with 3UL, and the dial reading noted. This was repeated with 3AR, 2CO, 3LO and 3GI.

Careful adjustments to the m.o. trimmer condenser brought the calibration right on the dot with 3GI, whilst adjustment of the iron-cored slug in the m.o. coil former brought the calibration right on 3UL. Actually there was quite a bit of re-adjusting to get both calibrations correct because of some interaction between the adjustments. This modulated oscillator covers the b.c. band in two sections and we were not interested, at this stage, in frequencies outside the band 530 to 530 KHz, our main purpose being to get as many calibration points in between as accurately as possible.

With the m.o. calibrations well established, the next step was to search for harmonics of the recorder oscillator.

With the recorder in "Record" and the m.o. tuned well away from 580 KHz, the radio receiver was placed near the recorder oscillator, then carefully tuned around each side of 580 KHz. The receiver was turned around physically so that the directional effect of its ferrite rod aerial would reduce pick-up of 3WV.

- The frequencies of all the stations mentioned in this lecture were as stated at the time the lecture was written. However, with the passage of time, some station frequencies may change, therefore any Amateur wishing to calibrate equipment by using b.c. stations as frequency references should verify the frequency of each station beforehand. A list of stations may be obtained from the Australian Broadcasting Control Board, 373 Elizabeth Street, Melbourne, Vic., 300.

Slightly on the low-frequency side of 3WV could be heard a whistle or beat of about 1,000 Hz. Switching the recorder on and off "Record" caused the beat to come on or go off accordingly, thus identifying an harmonic from the recorder oscillator.

The oscillator coil of this particular recorder was fitted with an adjustable iron-core and slight adjustment of this core enabled the beat to be reduced to zero-beat.

Due to the presence of programme material on 3WV, it was necessary to make final adjustments during short pauses in the programme. Because of metal used in the construction of the building, and some direct pick-up in the receiver wiring, it was not possible to get a complete null in reception of 3WV. Also, it was not practicable to use the modulated oscillator at this stage.

When zero-beat had been accomplished at 580 kHz, we knew that one of the recorder harmonics was at 580 kHz, and although we assumed that it was the 10th harmonic of 58 kHz, there was no absolute guarantee that this was so. It could have been the 9th harmonic of about 64.4 kHz, as the recorder oscillator could have been on this frequency because of the tolerance in the inductance of the oscillator coil and its associated condensers.

The next step was to tune the receiver very carefully higher in frequency to try and find the next higher harmonic. A weak "rushing" noise was located between 3AR and 3LO and was identified as an harmonic of the recorder oscillator. The modulated oscillator was then tuned to produce zero-beat with this "noise" and as near as could be determined from the calibration of the m.o. its frequency was almost 640 kHz, the dial indicating about 637.5 kHz. (the dial calibrations are in steps of 10 kHz, so that frequencies in between have to be estimated by eye).

If the frequency was 638 kHz, then the difference between 580 kHz, and 638 kHz, is 58 kHz, so that we would have located the 10th and 11th harmonics respectively of a fundamental frequency of 58 kHz.

But to be certain we went looking for the 12th harmonic and again we found one between 3AR and 3LO, and fairly close to TNT (Kalgo) 710 kHz, which could be received weakly.

Tuning the modulated oscillator zero-beat at this new harmonic, gave by eye estimation 695 kHz, (the 12th harmonic of 58 kHz is 696 kHz.) and in the circumstances this was taken to be 696 kHz. in actual fact.

Out of curiosity, we located another harmonic on approx. 755 kHz. (the 13th would be on 754 kHz, but as already mentioned, the reading between successive 10 kHz steps had to be estimated by eye so took this one to be 754 kHz.).

It will be observed that we could make use, directly, of one broadcasting station only, but could use others indirectly to check the calibration of the modulated oscillator.

The results we got were tabulated as follows:

Tuning Sequence	Frequency	Actual Harmonic	Difference from previous Frequency
A	580 kHz.	10th	—
B	638 kHz.	11th	58 kHz.
C	696 kHz.	12th	58 kHz.
D	754 kHz.	13th	58 kHz.

As the frequency between successive harmonics was 58 kHz, this meant that the fundamental frequency of the recorder oscillator was 58 kHz, which was what we set out to find.

Later the entire calibration of the modulated oscillator was checked. Its frequency ranges are:

A	150 - 335 kHz.
B	340 - 870 kHz.
C	870 - 2200 kHz.
D	1.9 - 5.1 MHz.
E	4.9 - 12.1 MHz.
F	12.1 - 30.0 MHz.

A receiver was not available which would cover Band A and all of Band B, but one was available which would cover from the broadcast band right through to 30 MHz, so some calculations were made to determine the feasibility of using some broadcasting stations as frequency references, then by harmonic techniques checking the calibration of the modulated oscillator.

Band A—Proposal.—Zero-beat harmonics of the m.o. against b.c. stations.

Band B—Proposal.—Zero-beat harmonics or direct against b.c. stations.

Band C—Proposal.—Zero-beat direct at low frequency and against b.c. stations.

However, there are no Australian broadcasting stations operating on 2.2 MHz and as mentioned it would not be feasible to try and rely on harmonics of b.c. stations, particularly at a distance.

For instance, in August 1969, field strength measurements were made of the harmonic radiation of station 3CS, at 0.9 mile from the centre of the aerial array and in the major lobe (3CS uses a directional aerial). The values were:

2nd harmonic:
2260 kHz, 187 micro-volts.

3rd harmonic:
3390 kHz, 20 micro-volts.

The calculated values for one mile becomes 168.3 and 18 micro-volts respectively and as a result of these low values of field strength it is well-nigh impossible to use the harmonics of 3CS, in the city of Colac, as they are well down in the general noise level.

However, there was a way out of this difficulty by obtaining a second modulated oscillator or signal generator and using its harmonics after checking its calibration in the m.f. b.c. band.

The method used was to tune a well warmed-up second m.o. to zero-beat with a selected b.c. station, then the multi-band receiver was used to find one of the harmonics in approximately the correct position on the receiver dial. Next the Palec m.o. was tuned and adjusted to give zero-beat with this

harmonic, care being taken to determine that the Palec m.o. was switched to the correct band and that it was beating directly and not via one of its harmonics.

In all cases the multi-band receiver was used to locate the next harmonic, either above or below the desired one to determine that it was the correct numerical one (as outlined earlier when discussing the tape recorder).

Fortunately sufficient harmonic output from the second m.o. was available to identify 30 MHz.

It must be appreciated that all zero-beating was done by ear as it was felt that this was sufficiently accurate and, in any case, equipment to detect the exact zero-beat was not available, also it must be realised that any error in the fundamental is multiplied by the numerical frequency of the harmonic.

However in all cases given, the worst error would not exceed 200 Hz. at 30 MHz. and would more likely be not more than about 40 Hz. at this frequency.

Most of the work was done at night because some of the stations were interstate.

This method may be used for frequency calibration of equipment using other selected broadcast stations, also under some circumstances VNG can be used.

If precision measuring equipment is available VNG will probably be more accurate than either WWV or WWVH since signals from both of these stations are subject to distance (via ionosphere hops as well as Doppler effect caused by rotation of the earth).

Here is a tabulation of the frequencies and b.c. stations used in the above project:

Band A: 150 kHz. - 335 kHz.—
Then $150 \times 4 = 600$ kHz. = 7ZL.

Then $335 \times 2 = 670$ kHz. = 2CO.

Band B: 340 kHz. - 870 kHz.—
Then $340 \times 2 = 680$ kHz. = 2KP.

Then $870 \times 1 = 870$ kHz. = 2GB.

Band C: 870 kHz. - 2200 kHz.—
Then $870 \times 1 = 870$ kHz. = 2GB.

Then $2200 \div 2 = 1100$ kHz. = 4LG.

Band D: 2200 kHz. - 5 MHz.—
Then $2200 \div 2 = 1.1$ MHz. = 4LG.

Then $5.0 \div 5 = 1.0$ MHz. = 3HA.

Band E: 5.0 MHz. - 12 MHz.—
Then $5 \div 5 = 1.0$ MHz. = 3HA.

Then $12 \div 8 = 1.5$ MHz. = 3AK.

Band F: 12 MHz. - 30 MHz.—
Then $12 \div 8 = 1.5$ MHz. = 3AK.

Then $30 \div 20 = 1.5$ MHz. = 3AK.

Further checks of the Palec m.o. calibrations were made in m.f. broadcast and higher bands by using the signals of 3UL, 3CS, 3YB and 3SR as their accuracy was known.

This lecture has shown how harmonics are generated when an electrical wave is passed through a non-linear device. Also, it has shown that generally harmonics are undesirable, but occasionally use can be made of them.

AMATEUR FREQUENCIES:

ONLY THE STRONG GO ON—SO
SHOULD A LOT MORE AMATEURS!

Federal Repeater Secretariat Report

1970 has come to an end with several repeaters now on the air. The Secretariat will have a report available early in the new year. This will be sent to known active groups. Anybody else who would like a copy should send a large stamped, self-addressed envelope to the Federal Repeater Secretariat, P.O. Box 342, Crows Nest, N.S.W., 2065. We would also like to receive information from any group as to progress in your area.

ACTIVITIES

Here, briefly, is the activity as we know it:

VK4: Last reports indicated that systems were being tried for both Brisbane and the Gold Coast.

VK2: A channel 4 system is operating in Sydney with good coverage. A channel 4 application is pending for Newcastle. Interest is being shown in a channel 1 system for Gosford. Orange in the Central West is still running their network on 146.1 in and 145.854 out. It is expected that the output will be changed to 145.6 at some future time.

VK3: We understand that there is an operational channel 4 system at both Gippsland and Geelong, and a proposed system for Mildura. There appears to be no Melbourne activity and the original Z1 system is off the air.

VK7: No up-to-date report, but there may be some activity in the north of the island.

VK5: We understand that the channel 4 system destined for the slopes of Mt. Lofti is currently being checked out at an Amateur QTH.

VK6: Work is under way for a channel 4 system in Perth which will be installed, after tests, on high ground near the t.v. sites. Albany in the south is showing interest in a repeater. It

is likely that VK6 will develop a channel 4 network to serve the needs of the State.

The American scene has also been interesting during the past year with the F.C.C. directing a new policy for their repeater operation. Those who have read the American Amateur Radio publications will have seen what has happened. It is to be hoped that it does not occur in this country and we urge all users and developers of repeaters to co-operate with your local repeater co-ordinator and in turn with the Federal body.

If anybody can add to the above report would you please advise the F.R.S. care of the above address.

VK2 have been checking with the F.R.S. on 6 metre fm. frequencies and have announced that they intend to introduce a local fm. channel in addition to the national channels of 52.525 MHz. (prime) and 52.656 MHz. (secondary) already in use in that State. The reason is to have available a channel which will be reasonably free from Interstate traffic for emergency/broadcast use at times when either of the national channels are open Interstate. This frequency is 52.7 MHz.

With this allocation in mind, the F.R.S. suggests that similar State channels be introduced to all States. These channels are at 50 kHz. spacing:

VK5	52.6 MHz.
VK6	52.656 MHz. (existing)
VK2	52.7 MHz.
VK7	52.750 MHz.
VK3	52.8 MHz.
VK4	52.850 MHz.

As these are at this stage only suggestions, the F.R.S. would like to hear from users in all areas with their thoughts.

The F.R.S. is also seeking information on the use of 6 metre a.m. nets. To

date we have the following information, which we wish to confirm and add to, so that the records may be updated.

VK6	52.586 MHz.
VK5	53.100 MHz.
VK7	53.035 MHz.
VK3	53.032 MHz.
VK4	53.032 MHz.
VK2	53.866 MHz. (Sydney)
VK2	53.982 MHz. (Wollongong)

We would like to know what areas these frequencies are being used and if there are any additional ones.

It is pleasing to note the list of beacons being maintained by Eric VK5LP in his "A.R." column. The Sydney repeater is usually automatically keyed every five minutes with its call sign—VK2BWI—in m.c.w. (145.9 MHz.). The choice of 146 MHz. by VK9XI on Christmas Island is interesting, we would like to hear if it is copied anywhere as the majority of stations on this frequency would be using fm. receivers.

We would like to wish all Amateurs all the best for the New Year and a reminder that if you have any question or problem with the national side of v.h.f. repeater, beacon or net operation, then please send your inquiry either direct or through your State's Federal Councillor to the Federal Repeater Secretariat, who are a sub-committee of Federal Executive. The address of the F.R.S. is P.O. Box 342, Crows Nest, N.S.W., 2065.

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N.Z.A.R.T. SUBSCRIPTION

Please take note that as from this notice the subscription to N.Z.A.R.T. for "Break-In" is increased to \$3.00 per annum. It is regretted that prior notice could not be given and any renewals or new subscriptions will be accepted only at this increased rate.

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ERRATA

The author of the Lecture Series advises of the following errors:

No. 5, July 1970, p. 15, col. 3, para 2 and 4: Change word "average" to "effective" (lines 7 and 14).

No. 6, August 1970, p. 22, col. 1: Theorem of Pythagoras should be Hypotenuse² = side² + side b². Also on page 23, last col.: Change 194.2 watts to 1194.2 watts.

No. 10A, Dec. 1970, p. 13: Postcode for A.B.C.B. is 3000. Col. 3, para 7: "as can a valve rectifier which is wrongly biased . . ." should read "as can a valve amplifier which is wrongly biased . . ."

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WINNING DIVISIONS OF R.D. TROPHY—1948 TO 1970

1948	VK2	1960	VK1
1949	VK7	1961	VK8
1950	VK1	1962	VK6
1951	VK7	1963	VK4
1952	VK8	1964	VK5
1953	VK6	1965	VK3
1954	VK5	1966	VK6
1955	VK3	1967	VK3
1956	VK6	1968	VK7
1957	VK6	1969	VK7
1958	VK6	1970	VK4
1959	VK7		



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W.I.A. WORKED ALL STATES (AUST.) AWARD

OBJECTS

- This Award has been created in order to stimulate interest in the v.h.f./u.h.f. bands and is of a high standard to fully acclaim the proficiency of the recipients on their achievements.
- The Award, to be known as the "Worked All States (Aust.) Award", will be issued to any Amateur in Australia or overseas who satisfies the conditions following.
- A certificate of the Award will be issued to applicants who show proof of having made two-way contact with the specified areas of the Commonwealth of Australia. Additional credit will be given for proof of contact with overseas countries, viz. New Zealand or Papua Territory. Countries, for the purposes of this Award, are set out in the Australian D.K.C.C. Countries List.

REQUIREMENTS

- Contacts must be made on the v.h.f./u.h.f. bands 52 MHz and above (Bands 8 and 9). Contacts made on 50-52 MHz prior to 1/4/64 will count towards the 52 MHz Certificate.
- One verification from each of the following areas of the Commonwealth of Australia is required:
 - Australian Capital Territory.
 - New South Wales.
 - Victoria.
 - Queensland.
 - South Australia.
 - Western Australia.
 - Tasmania.
 - Northern Territory.

In all, eight (8) verifications are required.

2.3 It is possible under these rules for one applicant to receive one Award for each of the Authorised Bands between 30 and 3,000 MHz.

OPERATION

- All contacts must be two-way contacts on the same band and crossband contacts will not be allowed.
- Contacts may be made using any authorised type of emission for the band concerned.
- Portable operation will be permitted provided that the portable location shall be in the State in which the licence was granted and in the call area in which the licence was granted in the case of overseas operation.
- All contacts must be made in accordance with the Regulations laid down in the "Handbook for Operators of Radio Stations in the Amateur Service" or its successor for Australian stations or in accordance with those Regulations applying in the country of the applicant in the case of overseas stations.

VERIFICATION

- It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.
- Each verification submitted must be exactly as received from the station contacted and altered or forged verifications will lead to the disqualification of the applicant.
- Each verification submitted must show the date and time of contact, type of emission

and frequency band used, the report and the location or address of the station at the time of contact.

- A check list must accompany every application setting out the details for each claim setting out in accordance with Rule 4.3.
- If any contacts were made whilst portable, this must be stated and the portable location given. The applicant must also state whether they are members of the W.I.A. or not.

APPLICATIONS

- Applications for membership shall be addressed to the Federal Awards Manager, W.I.A., P.O. Box 67, East Melbourne, Vic. 3002, accompanied by the verification and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.
- A nominal charge of 25c, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members.
- Successful applicants will be listed periodically in "Amateur Radio" and members wishing to have their verified country totals listed over and above those submitted at the time of application for membership, will notify these details, in writing, to the Federal Awards Manager.
- In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive, W.I.A., in the interpretation and application of these Rules shall be final and binding.
- Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them when necessary.

HEARD ALL VK CALL AREAS (H.A.-VK-C.A.) AWARD

At the last Federal Convention held in Adelaide at Easter it was agreed that the scope of the S.W.L. H.A.-VK-C.A. Award be enlarged to allow Australian S.W.L.'s to become eligible for the award on the same terms given below, and the S.W.L. Awards Manager will consider Australian applicants for the award as from the date of publication of these new rules in "Amateur Radio".

In particular, the requirements of Rule 1.2 should be noted. This requires that the applicant S.W.L. must be a member of an affiliated I.A.R.U. (International Amateur Radio Union) Society. For Australian applicants this means they must normally be members of the W.I.A.; for applicants in the U.K., to me members of the R.S.G.B.; for Japanese S.W.L. to be members of J.A.R.U. and so on. This rule will be strictly enforced and Rule 4.4 requires the applicant to state the name of the society of which he is a member.

OBJECTS

- This award was created in order to stimulate interest in the logging by both Australian and overseas listeners, of the call areas of the Commonwealth of Australia and its Territories and to give successful applicants some tangible recognition of their achievements.
- This award, to be known as the H.A.-VK-C.A. Award, will be issued by the Wireless Institute of Australia to any Shortwave Listener in the world who is a member of an affiliated society of the I.A.R.U. who satisfies the following conditions. An S.W.L. resident in Australia or its territories may be eligible for the award.
- A certificate of the award will be issued to the applicants who show proof of having logged stations in all of the Australian call areas as listed in the Appendix. No endorsements are available.

REQUIREMENTS

- Verifications are required from all the call areas of Australia and its Territories as listed in the Appendix. In all, 22 verifications are necessary.
- The commencing date of the award is 1st January, 1946. All loggings made on or after this date may be included.

OPERATION

- Loggings may be made of Australian stations using any authorised frequency band or type of emission permitted to Australian Amateurs.

3.2 Credit may only be claimed for logging stations using regularly-assigned government call signs.

3.3 Loggings of ship or aircraft stations in Australia or Australian Territories will not be eligible, but land-mobile or portable stations may be claimed, provided their specific location at the time of logging is clearly shown on the verification.

VERIFICATIONS

- It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that specific loggings have been made.
- Each verification submitted must be exactly as received from the station logged and altered or forged verifications will lead to the disqualification of those items and may lead to the disqualification of the applicant.
- Each verification submitted must show the date and time of transmission, type of emission and frequency band used and the location or address of the station at the time of logging.
- A check list must accompany every application setting out the following details.
 - Applicant's name, S.W.L. number, if any, and address;
 - Name of affiliated Society (see Rule 1.2);
 - Details of each logging as required by Rule 4.3.

APPLICATIONS

- Applications for membership shall be addressed to the S.W.L. Awards Manager, P.O. Box 67, East Melbourne, Victoria, Australia, 3002, accompanied by the verification and check list with sufficient postage.
- Sufficient postage (International Reply Coupons) must be enclosed to cover return postage of the card to the applicant.
- Where a reciprocal agreement exists between the W.I.A. and the applicant's Society, the appointed officer of that Society may carry out the check, and if correct, may forward a written application for the award on behalf of the applicant. The list (Rule 4.3) must also be forwarded.

5.3 Applications will be examined by the S.W.L. Awards Manager, who will arrange for the award to be forwarded either direct or through the applicant's Society as required.

5.4 In all cases of dispute, the decision of the S.W.L. Awards Manager and two officers of the Federal Executive of the W.I.A. in the interpretation and application of these rules shall be final and binding.

5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the W.I.A. reserves the right to amend them as necessary.

APPENDIX

Territory	Call Area	QSL Required
Australian Antarctica	...	
Heard Island	...	
Macquarie Island	...	
Australian Capital Territory	VK1	1
Lord Howe Island	...	
State of New South Wales	VK2	3
State of Victoria	VK3	3
State of Queensland	...	
Thursday Island	...	
Willis Island	...	
State of South Australia	VK5	3
State of Western Australia	VK6	3
Flinders Island	...	
King Island	...	
State of Tasmania	VK7	3
Northern Territory	VK8	1
Admiralty Islands	...	
Bougainville Island	...	
Christmas Island	...	
Cocos Island	...	
Nauru	...	
New Britain	...	
New Guinea	...	
New Ireland	...	
Norfolk Island	...	
Papua Territory	VK9	1

Note.—In areas above, where more than one confirmation is required, loggings may be made with any or all of the Territories listed in brackets.

AMATEUR EQUIPMENT AND CUSTOMS DEPT.

We were recently asked to investigate a complaint that the Customs Department had confiscated some Amateur equipment from a migrant to this country. The complaint was made to us by the holder of an Australian licence. Either he was not given the full story or failed to pass it on.

Investigation showed that the migrant did not have a current licence from the country from which he migrated, nor did he have the qualifications to obtain a licence either there or in Australia. There is much more to the story, but we have no desire to embarrass anybody involved, sufficient to say the equipment will not be returned.

Should any of your overseas Amateur friends have thoughts of migrating you can assure them that provided they play by the rules, they will have no trouble.

Briefly, licensed Amateurs may bring commercial gear with them for their own use (and not for sale for a period of 12 months from arrival in Australia) provided the equipment was purchased

at least 12 months prior to their departure for Australia; no duty is payable. A receipt must be produced to the Customs Department, showing clearly the date of purchase.

The same provisions apply to ancillary equipment. Home-built equipment is not subject to restrictions.

It must be remembered that an Australian licence must be obtained before the equipment can be used.



F.M. BROADCASTING

The inquiry by the Australian Broadcasting Control Board into the desirability or otherwise of introducing frequency modulation broadcasting into the Commonwealth will be held in Sydney, Melbourne and Adelaide as follows:

Sydney: From 1st March, 1971, to 5th March, 1971, in the Theatrette, Commonwealth Centre, Chifley Square, Sydney, commencing at 10 a.m. on Monday, 1st March, 1971.

Melbourne: From 15th March, 1971, to 19th March, 1971, at Ian Clunies

Ross House, 191 Royal Parade, Parkville, commencing at 10 a.m. on Monday, 15th March, 1971.

Adelaide: On 24th March, 1971, in the Board Room, Australian Broadcasting Control Board, 32 South Terrace, Adelaide, commencing at 10 a.m.

Announcing this, the chairman of the Board, Mr. Myles F. E. Wright, said that all persons who had submitted written statements to the Board in response to the Board's Notification dated 10th June, 1970, would be advised in writing of the time and place at which they would be required to attend the Board's inquiries for the purpose of giving evidence in relation to their written statements.

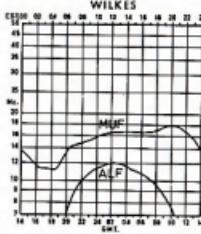
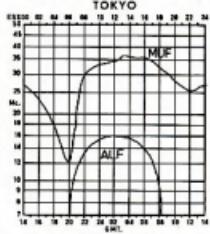
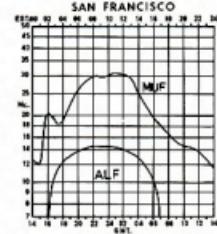
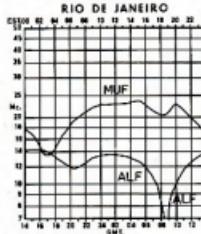
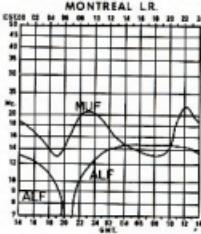
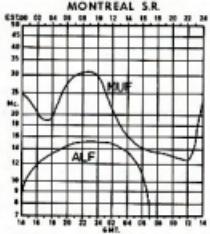
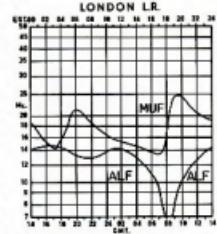
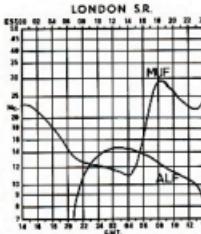
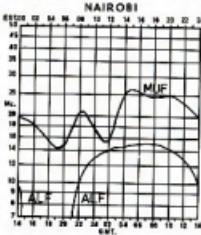
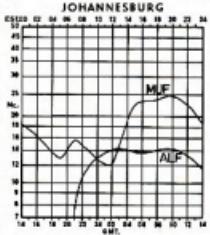
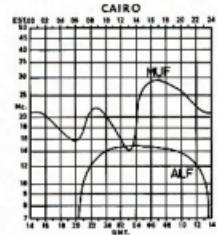
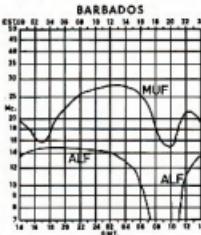
Mr. Wright added that in response to the Board's invitation for interested persons to give evidence at its inquiry, a total of 39 submissions had been received involving 56 witnesses.

AMATEUR FREQUENCIES:

ONLY THE STRONG GO ON—SO
SHOULD A LOT MORE AMATEURS!

PREDICTION CHARTS FOR FEBRUARY 1971

(Prediction Charts by courtesy of Ionospheric Prediction Service)



COOK AWARD



385 Whippoorwill Lane,
Stratford,
Connecticut, 06497, U.S.A.

Dear Sir.

This award has a special meaning for our family. My wife is a direct descendant of Captain Cook, and our one-year-old son, James Cook Monde, is named for his great-great-great-grandfather. It is therefore logical to award. So you can see that, should our logs qualify us for the certificate, it will assume a place of honour in our home. I have taken the liberty of enclosing a photograph of myself and "Jamie".

Thank you very much, and 73.

(Signed) James W. M. Monde, W1OKG.

★

"CQ" W.W. DX CONTEST AUST. RESULTS

ALL-TIME RECORDS INVOLVING VK CONTESTANTS

Phone—Single Operator, All Band

Points QSOs Zon. Cts.

VK2ADY/9 (1967) 5,045,115 3,310 153 334
(This is a world record)

C.W.—Single Operator, Single Band

Points QSOs Zon. Cts.

VK2ADY/9 (1967) 5,045,115 3,310 153 334
(This is a world record)

Multi-Operator, Single Transmitter

Points QSOs Zon. Cts.

VK5NO (1963) 945,248 1,199 86 185

R.S.G.B. CERTIFICATES AND AWARDS

As a result of discussion between the British Amateur Radio Teleprinter Group and the Radio Society of Great Britain, the R.S.G.B. has agreed that some of the Certificates and Awards for which they are responsible can be endorsed for r.t.t.y. operation subject to the normal submission of evidence such as QSL cards. A list of Awards follows.

RULES

The following general rules and conditions apply to all Certificates and Awards issued by the Radio Society of Great Britain and should be read in conjunction with the conditions which govern the award of the individual Certificate.

1. R.S.G.B. Certificates and Awards will be issued free of charge to members of the R.S.G.B. R.S.G.B. Certificates will also be issued on payment of a fee of 7/- (35p), or the equivalent in other currency, per Certificate, to non-members. The R.S.G.B. 7/- equals 19 International reply coupons.

2. In the case of transmitting Certificates and Awards, claimants must certify in writing that their licensed power was not exceeded in effecting the contacts upon which their claim is based.

3. All claims must be sent to R.S.G.B. headquarters. Cards will only be returned by registered or recorded delivery mail if sufficient extra money is sent with the claim.

4. In the case of transmitting Awards each claim must state that the U.K. must be acknowledged by documentary proof of the form of letters or cards showing that two-way communication has taken place. In the case of claims from outside the U.K., a statement from the applicant's national society that the received cards have been checked will be accepted.

5. Contacts with mobile stations (other than ships) located in the British Commonwealth will be accepted provided the exact location of each station at the time of contact is clearly stated on the evidence submitted.

6. Holders of an R.S.G.B. Certificate or Award are authorised to use the initial letters of the Certificate or Award.

7. Post-war cards only may be submitted as proof of contact or reception.

8. In the case of transmitting Awards, endorsement for 100 per cent. telegraphy, 100 per cent. telephony and 100 per cent. single sideband contacts and/or single band, may be made on the submission of cards clearly confirming the mode or frequency of transmission.

9. Contacts may be made from any location in the countries areas of which are separate from the same country, except that no claimant may submit cards confirming contacts with his station call when used for the purpose of an R.S.G.B. National Field Day event.

10. Claims submitted by radio societies must be signed by the licensee holder and the honorary secretary. If there are three or more, then by the licensee holder and the chairman.

11. In the case of any dispute concerning a claim the decision of the Council of the R.S.G.B. shall be final.

COMMONWEALTH DX CERTIFICATE (CDXC)

This Certificate may be claimed by any licensed Radio Amateur who can produce evidence of having made two-way communication with Amateur Radio stations located in at least 50 of the call areas of the British Commonwealth of Nations on the 14 MHz band, and in addition with at least 50 of the same call areas on other Amateur frequency bands. In the case of the "other" Amateur frequency bands, one particular call area may be claimed only once irrespective of the band on which the call area was worked. The "other" call areas do not have to be the same as those contacted on 14 MHz.

Members of the R.S.G.B. only may claim the CDXC lapel badge at an additional cost of 7/-, 35p or 10 International reply coupons.

BRITISH COMMONWEALTH RADIO TRANSMISSION AWARD (BCTRA)

This Award may be claimed by any licensed Radio Amateur who can produce evidence of having effected two-way communication with Amateur Radio stations located in at least 50 call areas of the British Commonwealth of Nations.

WORKED BRITISH COMMONWEALTH CERTIFICATE (WBC)

This Certificate may be claimed by any licensed Radio Amateur who can produce evidence of having effected two-way communication with at least one British Commonwealth Amateur radio station located in each of the five recognised continental areas as defined by the International Amateur Radio Union. (North and South America count as one continental area.)

BRITISH COMMONWEALTH RADIO RECEPTION AWARD (BCRA)

This Certificate may be claimed by any person not holding an Amateur Radio transmitting licence who submits evidence that he has received signals from Amateur Radio stations located in at least 50 of the call areas of the British Commonwealth of Nations.

L.A.E.U. REGION 1 AWARD

This award may be claimed by any licensed Radio Amateur who can produce evidence of having effected two-way communication with stations located in countries whose national societies are members of the Region 1 Division of the International Amateur Radio Union. This Award shall be issued in two classes: Class 1 for contacting all member countries, and Class 2 for contacting 25 member countries.

DX LISTENERS' CENTURY AWARD (DXLC)

This Award may be claimed by any person not holding an Amateur Radio transmitting licence who submits evidence that he has received signals from Amateur Radio stations located in at least 100 of the countries listed in the R.S.G.B. Countries List. Stickers will be available for every 25 additional countries confirmed.

FOUR METRES AND DOWN CERTIFICATES

These Certificates are available to both licensed Amateurs and Listeners and cover operating achievements in the 70, 144 and 432 MHz bands. A complete set of rules and further information are obtainable from the Society headquarters. The rules listed here-with do not apply to these awards.

Address all correspondence to R.S.G.B. Honorary Certificates Manager, Radio Society of Great Britain, 35 Doughty St., London, WC1N, 2AE.

SUBSCRIPTIONS DUE

All members of the W.I.A. are reminded that annual subscriptions are now due and should be paid promptly to their Divisional Secretary. Non financial members will not receive a copy of "A.R." and back copies may not be available upon request. To preserve continuity of your files of "A.R." please pay your annual subscription now.

SUPPORT PROJECT AUSTRALIS!

LIMITED SUPPLY OF—

GREAT CIRCLE BEARING MAPS

60c Post Free

Printed on heavy paper 20" x 30", Great Circle Map 16" diameter. Invaluable for all DXers and S.W.L's. Bearings around circumference allow precise beam headings to be made.

ALL MONEY TO GO TO "W.I.A. PROJECT AUSTRALIS"

Cheques, etc., to W.I.A., P.O. Box 67, East Melbourne, Vic., 3002

Many Maps have been sold and we would like to thank all those people who have made donations over and above the price of the Map.

NEW CALL SIGNS

SEPTEMBER 1970

VK1ZAD—J. S. Bland, 15 Abeckett St., Watson, 2602.
VK1ZQH—C. C. Quick, 123 Theodore St., Currimundi, 2604.
VK1ZWP—W. B. Pywell, 2 Birbal Place, Warananga.
VK2BZ—E. J. Mulholland, Kapooka Military Camp, Kapooka, 2661.
VK2CAB—J. A. Trevenor, 11 Grey St., Glenbrook, 2773.
VK2ASY—D. K. W. Bradbury, "Karana," Derrington, 2745.
VK2BAW—J. T. McMillan, 28 Glossop St., St. Marys North, 2769.
VK2BBT—N. W. Dueque, 1/55A Darling Point Rd., Darling Point, 2708.
VK2BCH—K. Y. H. Young, 138 Wall St., Kingsgrove, 2320.
VK2BVP—H. Little, 4 Fisher St., Parkes, 2350.
VK2DKZ—G. Lakin, 6/2 Grosvenor St., Kensington, 2033.
VK2EKE—K. J. Alcock, 1 Martin St., Ryde, 2112.
VK2JKW—G. H. Barnes, 30 Tweed St., Brunswick Heads, 2483.
VK2ZLF—M. A. Menchin, 21 Maxwell Ave., Glenrothes Heights, Orange, 2800.
VK3FF—P. J. Fitzherbert, 45 Mount Pleasant Rd., Belmont, 3216.
VK3AEU—R. J. Flanagan, 51 Valette St., Carrum, 3167.
VK3AJD—R. J. Dohm, Station: 55 Como Pde., Mentone, 3149; Postal: 15 Bowes Ave., Westbrook, Margate, Kent, England.
VK3AYI—R. Dorin, 16 Olander St., Glen Waverley, 3156.
VK3AJK—R. Spark, 57 Lloyd St., Moe, 3822.
VK3AKR—S. King, 1 Kalmia Ave., Mount Waverley, 3149.
VK3ANM—G. Finlay, 86 Carpenter St., Brighton, 3188.
VK3AQO—P. J. Solly, Station: Rainbow, 3424; Postal: P.O. Box 102, Rainbow, 3424.

VK3ARY—W. R. Badrock, 2 Kalmia Ave., Mt. Waverley, 3149.
VK3ASC—W. Brown, 19 Emerald St., Preston, 3072.
VK3AVW—D. W. Brumley, 32 Faversham Rd., Canterbury, 3128.
VK3BDR—R. E. Clarke, 5 Homebush Cres., Homebush, 3123.
VK3BDZ—V. W. Harrison, Rowville Ave., Sorrento, 3043.
VK3BEA—H. R. Pallett, Millroo Cres., Swan Hill, 3555.
VK3BEB—E. M.C. Gray, 27 Kenney Rd., Shepparton, 3632.
VK3BED—P. L. E. Bennett, 22 Charles St., Traralgon, 3844.
VK3BEM—G. N. Marks, 67 Stewart St., Rupanyup, 3388.
VK3BEP—M. N. White, 59 Charles St., Ascot Vale, 3032.
VK3YEC—D. J. McDonald, 24 Higgins Ave., Sunbury, 3429.
VK3YED—S. A. Cleveland, Jersey Rd., Bayswater, 3153.
VK3YEL—E. Rising, 189 Centenary Rd., Melton, 3330.
VK3YEM—J. E. McKenna, 14 Marshall Ave., Moe, 3825.
VK4MX—T. R. Martin, Station: 22 Thistle St., Blackall, 4723; Postal: P.O. Box 106, Blackall, 4723.
VK4ZH—C. R. Saunders, Advanx St., Kenmore, 4069.
VK5KS—R. A. Sedunary, Lot 134, Compass Dr., Seaford, 5165.
VK5QO—M. L. Severson, 5 Charlbury Rd., Mandina Gardens, 3081.
VK5TT—A. G. Bolton, Mountford Ave., Aldgate, 5154.
VK5XD—K. G. Ellis, 5 May St., Henley Beach, 5022.
VK5ZH—I. A. Rourke, 24 Edmund St., Norwood, 5021.
VK5ZJ—J. Moody, 30 Aquamarine Dr., Salisbury East, 5109.
VK5ZJJ—C. J. W. Cook, 28 North Pde., Kingswood, 5062.
VK6AN—L. A. Ball, 55/59 Cambridge St., West Leederville, 6007.

VK6BY—G. S. Byass, 79 Parramatta Rd., Doubleview, 6018.
VK6NH—R. J. H. King, Flat 4, Tijuana Court, 19 Blackwood Ave., Hamilton Hill, 6163.
VK6SSG—R. J. Caldwell, House No. 651, Tom Price, 6751.
VK6WA—T. J. L. Harrison, 7 Frimley Way, Westbury, 6004.
VK6ZGG—G. R. Gaiger, 184A Sevenoak St., Beckenham, 6107.
VK6ZGO—M. K. Peterson, 1 Walney Ave., Dianella, 6082.
VK8AJ—C. McMillan, Anna-Roula Carpark, Cnr. McMillan's Rd. and Sturt Hwy, Berrimah, 5788.
VK8KG—F. Gostling, Station: Nthullunbuy, Gove; Postal: C/o. Nabulosi Pty. Ltd., Nthullunbuy, Gove, 5797.
VK8ZHT—H. G. Tremethick, 1965 Bald Circuit, Alawa, 5792.
VK9BT—D. T. Trickett, C/o. Bechtel Wk Mine Sits Quarters, Panguna, Bougainville.
VK9FH—G. H. Hargreaves, C/o. Airmen's Memorial Fund, 100 Pitt St., Sydney, 2000.
VK9GH—R. G. Hughes, Lot 3, Section 16, Tokarara, Port Moresby, P.
VK9LM—L. G. Meek, C/o. A.W.A. Ltd., P.O. Box 1353, Boroko, P.
VK9LW—L. Varney, Lot 17, Section 21, Boroko, P.
VK9XK—K. J. Hiam, Christmas Island, Indian Ocean.
VK9XX—A. P. Kershaw, Christmas Island, Indian Ocean.
VK9CC—R. C. Christiansen, Mawson.
VK9DN—K. D. Hanson, Mawson.
VK9PF—P. J. Fitzherbert, Casey Base.

CANCELLATIONS

VK1EM—E. J. Mulholland, Now VK2HZ.
VK3WZ—R. F. Whalley. Deceased.
VK3AA—R. J. Caldwell. Now VK6SG.
VK3ZL—R. J. Caldwell. Now VK6SG.
VK3VDK—S. King. Now VK1AKR.
VK3ZGC—W. R. Badrock. Now VK3ARY.
VK3ZHI—J. G. Finlay. Now VK1AKR.
VK3ZRD—R. Dorin. Now VK3AYI.
VK3ZTN—J. J. Fitzherbert. Now VK3FF.
VK3ZTN—J. J. Solly. Now VK3AQO.
VK3ZUV—D. W. Brumley. Now VK3ARY.
VK3ZUW—D. N. White. Now VK3AVW.
VK4QO—P. J. Murdoch. Not renewed.
VK4QT—C. R. J. Paton. Deceased.
VK4QL—M. S. Pedder. Not renewed.
VK4ZT—H. N. Sandford. Transferred to A.C.T.
VK5ZDB—C. J. McCarthy. Not renewed.
VK5SLV—Christian Brothers College. Not renewed.
VK5SF—J. C. Watson. Not renewed.
VK5ZDB—G. S. Byass. Now VK6BY.



VK2 AREA 5 MEETING

All Amateurs, W.I.A. members and Associates and S.W.I.'s in the South-West, Area 5 of VK2 are invited to a special meeting on Sunday, 28th February, 1971, at 3 p.m. in the R.S.L. Club, 125, Memorial Hall, Lockhart, next to the Post Office.

Agenda: Formation of Area Committee; future conventions and field days; repeaters; awards; any other business you have.

Area 5 is about 250 miles by 250 miles in extent and has about 250 cities, towns and villages with active Amateurs. The Area 5 has been held every year, usually on a Friday evening E.A.S.T. on frequency 3667 KHz, and has been going now for over seven years.—Harry VK3AEQ (Area Officer).

OBITUARY

ROY D. NICHOLLS, VK1RN

We regret to report the sudden passing of Roy D. Nicholls, VK1RN, in early November at Burnie.

Roy commenced his career as an apprentice to an electrical contractor, subsequently serving four years in the Army Signals. After the war, he spent a short time with the P.M.G. before going to the A.P.P.M. paper mills at Burnie where he was engaged in electronics for 17 years.

For the past few years Roy conducted his own business in TV and electrical servicing and also a service.

Roy was an active member of the local zone of the W.I.A. for many years, and to his widow and family we extend our sincere sympathy.

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Sydney, Phone: 401212.
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and specifications on Trio equipment.

Name: _____

Address: _____

VHF

Sub-Editor: ERIC JAMIESON, VK5LP
Forreston, South Australia, 5233.

Closing date for copy 30th of month.
All Times in E.S.T.

AMATEUR BAND BEACONS

VK3 144.700 VK3VE Kilyoth, 20m. E. of Melb.
 VK4 144.390 VK4VW 167m. W. of Brisbane.
 VK5 53.000 VK5VF Mt. Lofty.
 144.820 VK5VF Mt. Lofty.
 VK6 52.006 VK6VF Tuart Hill.
 52.900 VK6TS Carnarvon.
 144.550 VK6VE Mt. Barker.
 145.000 VK6VF Tuart Hill.
 435.000 VK6VF (on arrangement).
 VK7 144.900 VK7VF Devonport.
 VK9 144.600 VK9X1 Christmas Island.
 ZL1 145.000 ZL3V9H Christchurch.
 JA 31.985 JA1IYG Japan.
 W 50.651 WB6KAP U.S.A.
 HL 50.100 HL8SWI South Korea.

Another beacon has been added to the growing list this month with the great news that the VK3 beacon, long proposed, is now operating on 2 metres on a frequency of 144.700, running 10 watts c.w. to a cloverleaf antenna. By the time this is in print, it should be located at a prominent point in Kilyoth, about 20 miles east of Melbourne on the Colonial Gas building, and 650 feet above sea level. I am indebted to Bob VK3AOT for this great piece of news, it fills a long awaited vacant spot in southern Australia. My happiness will be complete when I receive the same news from VK2.

While on the subject of beacons, news comes from Christmas Island Amateur Radio Club from the pen of Tony VK9XXX, Secretary, that their beacon using the call sign VK9X1 operates on a frequency of 144.600 MHz, not 146.000 MHz, as previously mentioned. The beacon beams towards Carnarvon on the west coast of Western Australia. It sends the call sign of the club station, VK9X1, in c.w. followed by a long dash. Tony says he feels the beacon should be heard in the area of Port Hedland as during a good 2 metre opening early in November at 1900 hours the harbour-master at Christmas Island made contact with the harbour-master at Port Hedland using the commercial v.h.f. station on 95.6 MHz, a calculated distance of 960 miles. The beacon uses a converted commercial radio telephone unit and the 6 element beams are on top of a 200 ft. commercial radio station tower.

Tony goes on to say, "I have just erected an antenna system which includes a 3 element h.f. beam and a 3 element 2 metre beam and a 6 element 6 metre beam, coupled to a Yaesu receiver with a 1000 watt power amplifier. At present I cannot transmit on v.h.f. but am quite willing to listen and if necessary work cross-band with anyone interested. I have already contacted Darwin on h.f. and trust that they will be able to receive me. Anybody interested can write to the Amateur Radio Club, Christmas Island, Indian Ocean, and we will see what can be done." Thanks indeed for your interesting information Tony, and please keep me informed of your activities over there.

Everyone seems to have had their fair share of 6 metre DX so far this season. Many of the openings have been quite good, and stations have been available for many hours at a time. New Zealand stations have been worked in V.H.F. this season, including an elusive last year, ZM5QZ, and ZL3V9H plus a ZL3V9H to have been about the only starters. ZL t.v. has been noted strongly for hours on end but with no other activity.

Charlie C21AA in Nauru right up near the equator, has been causing quite a stir in the eastern States. Roger VK2ZRH was one of several stations to work him. Charlie operates on 4.400 m. v.h.f. calling C21AA and ZL3V9H. A message from Bob VK4ZRY indicates he too worked C21AA, on 29th Dec. Bob further indicates on this day the band was open all the way from Nauru, and possibly further. To VK2ZRH, who you ask, "A QSL card from JA3XPO now only leaves a QSL to come from JA8 to give Bob all JA areas.

Probably the best day in VK5 was 26th Dec., this is often the best day of the season and one I look forward to anyway. So many signals around you had plenty to choose from. Famed 50 degree sun was still continuing its regularity, and the absence this year of stations calling CQ DX a.m. stations only. Personally, I got quite a kick out of listening to Colin VK5ZDK in Mt. Gambier on back scatter when he was working with me. V.H.F. Despite several calls to Colin, I could not latch on to him, however the signals had the characteristic flutter and were not there when the beam was pointed at him.

With quite a lot of good 6 metre DX around for the last couple of weeks of 1970, many stations have had an increased opportunity of getting together 100 or more AX call signs for the Cook Award, v.h.f. section. As there were a number of us who did plenty of lobbying to get this section added, it is hoped as many as possible will now follow up by submitting a log and claiming the award. Although you have until the end of 1971 to submit your claim, I suggest you do it soon as you will surely forget.

On the 2 metre scene, there has certainly not been any sign of stagnation. Probably the prize for this month's best goes to Barry VK5ZKJ, ever vigilant as usual, for his contact with Bernie VK5GE in Albany on 2 metres on 15th Dec. with 100 watts into a 16 el. co-linear and on 576 a 3/20 with 30 watts input to a 32 el. expanded array. The power supply was a 12 volt 120 a.h. battery.

Another good contact was from Bob VK3AOT. VK3 Publicity Officer, indicated that Noel VK3GZ is operating a beacon nightly between 1800 and 2200 hours on 52.150 MHz. Identification in the form of voice announcements runs continuously. The transmitter is a modified Pye Mk. 3A transceiver with 100 watts into a 16 el. co-linear. Noel transmits 40 watts of a.m. to a 5 el. yagi on 8 metres and looks for contacts nightly. He listens on the 8m. liaison frequency of 14.120 MHz at 2000 hours nightly.

Appropriate to our last month that Ray VK5KZD may have a dish and an extremely large 144 MHz horn antenna, and two separate groups to try moon bounce experiments this year. Ray requests some help from interested people to assist in the building, development, mounting and testing of the equipment. So if you are able, give Ray a hand, why not enquire what can be done? Better still, organise a group to do the job properly, and try some E.M.E. experiments as a reward.

Television stations have provided quite a lot of interest to me this year, the coverage of my work as a technician repairing the beastly things, during periods of high sporadic E activity, tremendous signals have been observed mainly from VK4. On no less than four occasions three stations have been observed on Channel 3 (99.5 MHz) with very good signals each fading in and out in turn. Call signs could easily be read from the test patterns, indicating they were in Rockhampton, Townsville and Mourilyan Downs (exact location unknown). On 23rd Dec. on Ch. 3 Rockhampton was so strong its signal was equally as good as that of our Ch. 2, only 20 miles away. Signals have been observed on two occasions on Ch. 4 (not Port Lincoln, S.A.). Adelaide Ch. 5 has had some interesting interference by Ch. 2 in Brisbane on seven occasions in some of the higher locations of the Adelaide Hills, in some cases necessitating service calls to satisfy the customers! In this addition to numerous signals on Ch. 1 and 9, the M.U.F. this year seems to have gone over the 100 MHz. at times. I personally think next year will see the start of some good 2 metre DX again, probably from VK4 and ultimately to ZL. Best news from portable experiments seems to be around mid-December to about 26th to 28th. Conditions for 2 metre DX likely to produce signals up to 1,000 miles seem to drop rapidly after that.

Keep in mind the John Maple Memorial Field Day Contest for the week-end of 13th and 14th February. Details have been published in "Amateur Radio" in Dec. 1970. Go out portable if you can, if you are unable to do so, just come on the air and give the portable stations some contact.

To conclude, here is the thought for the month: "Even the wisest men make fools of themselves about women, and even the most foolish women are wise about men." Until next month, plenty of DX. 73, Eric VK5LP. The Voice in the Hills.

"The morning of the 27th saw conditions going down fast and our only new contact of the day was VK3AYH/P3 at 'Little Desert' National Park near Wiluna. For the rest the conditions got worse and no further contacts were made. 30 stations were worked on 144 MHz. u.h.f. during the period for a total of 29 contacts. We found later that Bob VK3AOT/P3 at Cowley was away from his location on the Saturday evening due to equipment troubles - well you can't win them all, but it was worth trying.

"Equipment used was 03/12 at 15 watts input on 100 watts plus 05/40 amplifier giving an up to 100 watts output, into a 27 el. yagi. On 432 a 3/20 running 30 watts input to a 16 el. co-linear and on 576 a 3/20 with 30 watts input to a 32 el. expanded array. The power supply was a 12 volt 120 a.h. battery."

Further news from the Bob VK3AOT - VK3 Publicity Officer, indicated that Noel VK3GZ is operating a beacon nightly between 1800 and 2200 hours on 52.150 MHz. Identification in the form of voice announcements runs continuously. The transmitter is a modified Pye Mk. 3A transceiver with 100 watts into a 16 el. co-linear. Noel transmits 40 watts of a.m. to a 5 el. yagi on 8 metres and looks for contacts nightly. He listens on the 8m. liaison frequency of 14.120 MHz at 2000 hours nightly.

Appropriate to our last month that Ray VK5KZD may have a dish and an extremely large 144 MHz horn antenna, and two separate groups to try moon bounce experiments this year. Ray requests some help from interested people to assist in the building, development, mounting and testing of the equipment. So if you are able, give Ray a hand, why not enquire what can be done? Better still, organise a group to do the job properly, and try some E.M.E. experiments as a reward.

Television stations have provided quite a lot of interest to me this year, the coverage of my work as a technician repairing the beastly things, during periods of high sporadic E activity, tremendous signals have been observed mainly from VK4. On no less than four occasions three stations have been observed on Channel 3 (99.5 MHz) with very good signals each fading in and out in turn. Call signs could easily be read from the test patterns, indicating they were in Rockhampton, Townsville and Mourilyan Downs (exact location unknown). On 23rd Dec. on Ch. 3 Rockhampton was so strong its signal was equally as good as that of our Ch. 2, only 20 miles away. Signals have been observed on two occasions on Ch. 4 (not Port Lincoln, S.A.). Adelaide Ch. 5 has had some interesting interference by Ch. 2 in Brisbane on seven occasions in some of the higher locations of the Adelaide Hills, in some cases necessitating service calls to satisfy the customers! In this addition to numerous signals on Ch. 1 and 9, the M.U.F. this year seems to have gone over the 100 MHz. at times. I personally think next year will see the start of some good 2 metre DX again, probably from VK4 and ultimately to ZL. Best news from portable experiments seems to be around mid-December to about 26th to 28th. Conditions for 2 metre DX likely to produce signals up to 1,000 miles seem to drop rapidly after that.

Keep in mind the John Maple Memorial Field Day Contest for the week-end of 13th and 14th February. Details have been published in "Amateur Radio" in Dec. 1970. Go out portable if you can, if you are unable to do so, just come on the air and give the portable stations some contact.

To conclude, here is the thought for the month: "Even the wisest men make fools of themselves about women, and even the most foolish women are wise about men." Until next month, plenty of DX. 73, Eric VK5LP. The Voice in the Hills.

☆

VK2 FIELD DAYS AND ACTIVITIES FOR 1971

Feb. 21—Central Coast Field Day at Gosford.
 Feb. 26—Area 5 Get-together at Lockhart. Details from Harry VK2AEC.
 Mar. 13/14—Area 2 Dinner/Field Day at Scone. Details from Max VK2BMK.
 Mar. 25—Annual General Meeting of the VK3 Division.
 Mar. 27—Annual Dinner. Details from Admin. Secretary.
 Mar. 28—Annual Divisional Field Day at VK2WV. Details from D. D. D. D.
 Easter—Annual Convention/Field Day at Cannington. Details from VK1ACA—C.R.S.
 Easter—Annual Convention at Urunga. Details from anyone on the North Coast.

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3-08	3/4	8	3	No. 3010	\$1.06
3-16	3/4	16	3	No. 3011	\$1.06
4-08	1	8	3	No. 3014	\$1.19
4-16	1	16	3	No. 3015	\$1.19
5-08	1 1/2	8	4	No. 3018	\$1.32
5-16	1 1/2	16	4	No. 3019	\$1.32
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"QST," March, 1958;
"Amateur Radio," Dec. 1959.

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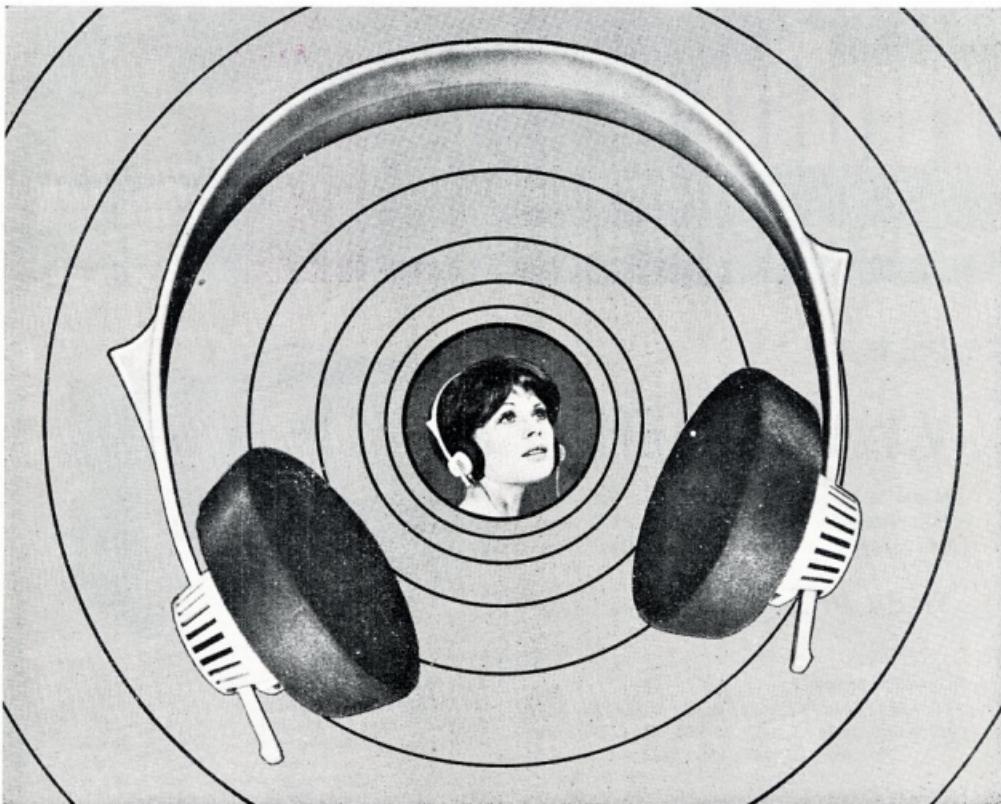
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